

1           1. An apparatus for automatically controlling an implement towed by a farm  
2 machine comprising:  
3           a computer on board the farm machine that is capable of receiving  
4 information from several sources, recording that information, and controlling multiple  
5 functions of the farm machine and the towed implement based on the information  
6 received, wherein the computer is programmed to record the previous movements  
7 of the farm machine and the portion of a farm field that has not yet been worked,  
8 and to automatically direct the towed implement to work the portion of the farm field  
9 that has not previously been worked;

10          a Global Positioning System Receiver interconnected with and transmitting to  
11 the computer information on the location of the farm machine;

12          implement condition and position sensors interconnected with and  
13 transmitting to the computer information on the status of the towed implement and  
14 the position of the towed implement relative to the farm machine;

15          a control module interconnected with and receiving control signals from the  
16 computer;

17          an implement control apparatus controlling the actions of the towed  
18 implement and the position of the towed implement relative to the farm machine and  
19 interconnected with and receiving control signals from the control module; and

20          a group of manual controls interconnected with the control module and  
21 capable of substituting manual control signals for each of the signals generated by  
22 the computer.

1           2. An apparatus for automatically controlling an implement towed by a  
2 tractor comprising:  
3           a computer on board the tractor that is capable of receiving information from  
4 several sources, recording that information, and controlling multiple functions of the  
5 tractor and the towed implement based on the information, wherein the computer is  
6 programmed to record the previous movements of the tractor and the portion of a  
7 farm field that has not yet been worked, and to automatically direct the towed  
8 implement from one side to the other side of the tractor;  
9           a Global Positioning System Receiver interconnected with and transmitting  
10 information on the location of the tractor to the computer;  
11          implement condition sensors interconnected with and transmitting to the  
12 computer information on the status of the towed;  
13          a control module interconnected with and receiving control signals from the  
14 computer;  
15          implement control apparatus controlling the actions of the towed implement  
16 and the position of the towed implement relative to the tractor and interconnected  
17 with and receiving control signals from the control module;  
18          a group of manual controls interconnected with the control module and  
19 capable of substituting manual control signals for each of the signals generated by  
20 the computer;  
21          a tractor hitch on the tractor for attaching to the tractor a towbar for towing an  
22 implement;

1           an implement hitch on the towed implement for connecting the farm  
2 implement to the towbar;  
3           a tractor hitch sensor interconnected with and transmitting to the computer  
4 information on the angular orientation of the towbar to the direction of movement of  
5 the tractor; and  
6           an implement hitch sensor interconnected with and transmitting to the  
7 computer information on the angular orientation of the towbar to the direction of  
8 movement of the implement.

9           3. The apparatus of claim 2 wherein the tractor and hitch sensors are  
10 potentiometers.

11          4. A method of automatically controlling a towed implement connected to a  
12 tractor with a towbar comprising:

13           using a Global Positioning System receiver interconnected with and  
14 transmitting information on the location of the tractor to a computer on board the  
15 tractor;

16           recording the Global Positioning System location information in the computer;  
17 and

18           controlling the position of the towed implement based on information the  
19 computer receives from multiple sensors reading the tractor and implement  
20 functions and sensors reading the angular orientation of the towbar to the directions  
21 of motion of the tractor and the farm implement.

22          5. The method of claim 4 further including using a computer program to  
23 record the previous movements of the tractor and the implement and the portion of

1 a farm field that has not yet been worked, and to automatically activate the  
2 implement when the implement is located over the portion of the farm field that has  
3 not previously been worked.

4       6. A method of automatically controlling a farm machine with an attached  
5 implement comprising:

6           using a Global Positioning System receiver interconnected with and  
7 transmitting information on the location of the farm machine to a computer on board  
8 the farm machine;

9           recording the Global Positioning System location information in the computer;  
10 and

11           controlling the position and status of the implement based on information the  
12 computer receives from multiple sensors reading the farm machine and implement  
13 functions and the position of the implement relative to the farm machine..

14       7. The method of claim 6 further including using a computer program to  
15 record the previous movements of the farm machine and the portion of a farm field  
16 that has not yet been worked, and to automatically activate the implement when the  
17 implement is located over the portion of the farm field that has not previously been  
18 worked.

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